

AXL F AI8 XC 1F - Analog module

2701232

<https://www.phoenixcontact.com/us/products/2701232>

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The figure shows the standard item

Axioline F, Analog input module, Analog inputs: 8, 0 V ... 5 V, -5 V ... 5 V, 0 V ... 10 V, -10 V ... 10 V, 0 mA ... 20 mA, 4 mA ... 20 mA, -20 mA ... 20 mA, connection technology: 2-conductor, transmission speed in the local bus: 100 Mbps, Extreme conditions version, degree of protection: IP20, including bus base module and Axioline F connectors

Product description

The module is designed for use within an Axioline F station. It is used to acquire analog voltage and current signals.

Your advantages

- 8 analog, bipolar input channels for the connection of either voltage or current signals
- Connection of sensors in 2-conductor technology
- Voltage ranges: 0 V ... 10 V, ± 10 V, 0 V ... 5 V, ± 5 V
- Current ranges: 0 mA ... 20 mA, 4 mA ... 20 mA, ± 20 mA
- Device rating plate stored
- Can be used under extreme ambient conditions
- Extended temperature range of -40 °C ... +70 °C (see "Tested successfully: use under extreme ambient conditions" in the data sheet)
- Partially coated PCBs

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 2701232 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DR02 |
| Product key | DRI241 |
| GTIN | 4046356730495 |
| Weight per piece (including packing) | 273.8 g |
| Weight per piece (excluding packing) | 204 g |
| Customs tariff number | 85389091 |
| Country of origin | DE |

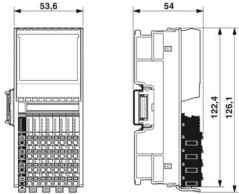
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Technical data

Dimensions

| | |
|---------------------|--|
| Dimensional drawing |  |
| Width | 53.6 mm |
| Height | 126.1 mm |
| Depth | 54 mm |
| Note on dimensions | The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715). |

Notes

Note on application

| | |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

Material specifications

| | |
|-----------------|-----------------|
| Color (Housing) | gray (RAL 7042) |
|-----------------|-----------------|

Interfaces

Axioline F local bus

| | |
|----------------------|-----------------|
| Number of interfaces | 2 |
| Connection method | Bus base module |
| Transmission speed | 100 Mbps |

System properties

Programming data (LocalbusSlave)

| | |
|---------------------|---------|
| Input address area | 16 Byte |
| Output address area | 0 Byte |

Fieldbus data telegram (PROFIBUS)

| | |
|-----------------------------|---------|
| Required parameter data | 11 Byte |
| Required configuration data | 6 Byte |

Input data

Analog: General

| | |
|--------------------------|--|
| Input name | Analog inputs |
| Description of the input | Differential inputs, voltage or current can be chosen separately |
| Number of inputs | 8 |

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| | |
|---|--|
| A/D conversion time | 2 μ s |
| Connection method | Push-in connection |
| Connection technology | 2-conductor |
| Note regarding the connection technology | shielded, twisted pair |
| Current input signal | 0 mA ... 20 mA 4 mA ... 20 mA -20 mA ... 20 mA |
| Input resistance current input | 104 Ω (typical) |
| Voltage input signal | 0 V ... 5 V -5 V ... 5 V 0 V ... 10 V -10 V ... 10 V |
| Input resistance of voltage input | 268 k Ω (typical) |
| A/D converter resolution | 16 bit |
| Data formats | IB IL, S7-compatible |
| Input filter | 30 Hz, 12 kHz and mean value generation (can be parameterized) |
| Filtering | RFI filtering / passive TP 1st order |
| Limit frequency (3 dB) | 30 Hz 12 kHz (in fast mode) |
| Common mode voltage range signal - ground | -50 V DC ... 50 V DC |
| Measured value representation | 16 bits (15 bits + sign bit) |
| Protective circuit | Transient protection of inputs; Suppressor diode Overload protection of the current inputs; No; ± 5.2 V DC, maximum, $I_{max} = 50$ mA Overload protection of the voltage inputs; ± 30 V DC, maximum |

Product properties

| | |
|--------------------|---|
| Product type | I/O component |
| Product family | Axioline F |
| Type | block modular |
| Mounting position | any (no temperature derating) |
| Scope of supply | including bus base module and Axioline F connectors |
| Special properties | Extreme conditions version |

Insulation characteristics

| | |
|----------------------|------------------------------|
| Overvoltage category | II (IEC 60664-1, EN 60664-1) |
| Pollution degree | 2 (IEC 60664-1, EN 60664-1) |

Electrical properties

| | |
|---|-----|
| Maximum power dissipation for nominal condition | 2 W |
|---|-----|

Potentials: Axioline F local bus supply (U_{BUS})

| | |
|----------------|--|
| Supply voltage | 5 V DC (via bus base module) |
| Current draw | max. 130 mA (up to HW 01) max. 60 mA (from HW 02) |

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| | |
|--|---------------------------|
| | typ. 105 mA (up to HW 01) |
| | typ. 45 mA (from HW 02) |

Potentials: Supply for analog modules (U_A)

| | |
|----------------------|--|
| Supply voltage | 24 V DC |
| Supply voltage range | 19.2 V DC ... 30 V DC (including all tolerances, including ripple) |
| Current draw | max. 55 mA (from HW 02) |
| | max. 45 mA (up to HW 01) |
| | typ. 43 mA (from HW 02) |
| | typ. 35 mA (up to HW 01) |
| Protective circuit | Surge protection; electronic (35 V, 0.5 s) |
| | Reverse polarity protection; Polarity protection diode |
| | Transient protection; Suppressor diode |

Electrical isolation/isolation of the voltage ranges

| | |
|--|------------------------|
| Test voltage: 5 V supply of the local bus (U_{BUS}) / 24 V supply (I/Os) | 500 V AC, 50 Hz, 1 min |
| Test voltage: 5 V supply of the local bus (U_{BUS}) / analog inputs | 500 V AC, 50 Hz, 1 min |
| Test voltage: 5 V supply of the local bus (U_{BUS}) / functional ground | 500 V AC, 50 Hz, 1 min |
| Test voltage: 24 V supply (I/O) / analog inputs | 500 V AC, 50 Hz, 1 min |
| Test voltage: 24 V supply (I/O) / functional ground | 500 V AC, 50 Hz, 1 min |
| Test voltage: Analog inputs / functional ground | 500 V AC, 50 Hz, 1 min |

Connection data

Connection technology

| | |
|-------------------------------|---|
| Connection name | Axioline F connector |
| Note on the connection method | Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual. |

Axioline F connector

| | |
|-----------------------------------|---|
| Connection method | Push-in connection |
| Note on the connection method | Please observe the information provided on conductor cross-sections in the "Axioline F: system and installation" user manual. |
| Conductor cross-section, rigid | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section, flexible | 0.2 mm ² ... 1.5 mm ² |
| Conductor cross-section AWG | 24 ... 16 |
| Stripping length | 8 mm |

Environmental and real-life conditions

Ambient conditions

| | |
|---------------------------------|---|
| Ambient temperature (operation) | -25 °C ... 60 °C (Standard) |
| | -40 °C ... 70 °C (Extended, see section "Tested successfully: use under extreme ambient conditions" in the data sheet.) |
| Degree of protection | IP20 |
| Air pressure (operation) | 70 kPa ... 106 kPa (up to 3000 m above sea level) |

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| | |
|--|---|
| Air pressure (storage/transport) | 70 kPa ... 106 kPa (up to 3000 m above sea level) |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |
| Permissible humidity (storage/transport) | 5 % ... 95 % (non-condensing) |

Mechanical test

| | |
|--|-----|
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | 5g |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | 30g |
| Continuous shock in accordance with EN 60068-2-27/IEC 60068-2-27 | 10g |

Test (noxious gas)

| | |
|--|---------------------------------|
| Test standard | ISA-71.04-2013 G3 Harsh Group A |
| | IEC 60068-2-60:2015 Method 4 |
| Temperature | 25 °C ±1 K |
| Humidity (relative) | 75 % ±3 % |
| Test duration | 21 Days |
| Volume concentration H ₂ S (Hydrogen sulfide) | 50 ppb |
| Volume concentration NO ₂ (Nitrogen dioxide) | 1250 ppb |
| Volume concentration Cl ₂ (Chlorine) | 10 ppb |
| Volume concentration SO ₂ (Sulfur dioxide) | 300 ppb |

Standards and regulations

| | |
|------------------|---------------------------------------|
| Protection class | III (IEC 61140, EN 61140, VDE 0140-1) |
|------------------|---------------------------------------|

Mounting

| | |
|-------------------|-------------------------------|
| Mounting type | DIN rail mounting |
| Mounting position | any (no temperature derating) |

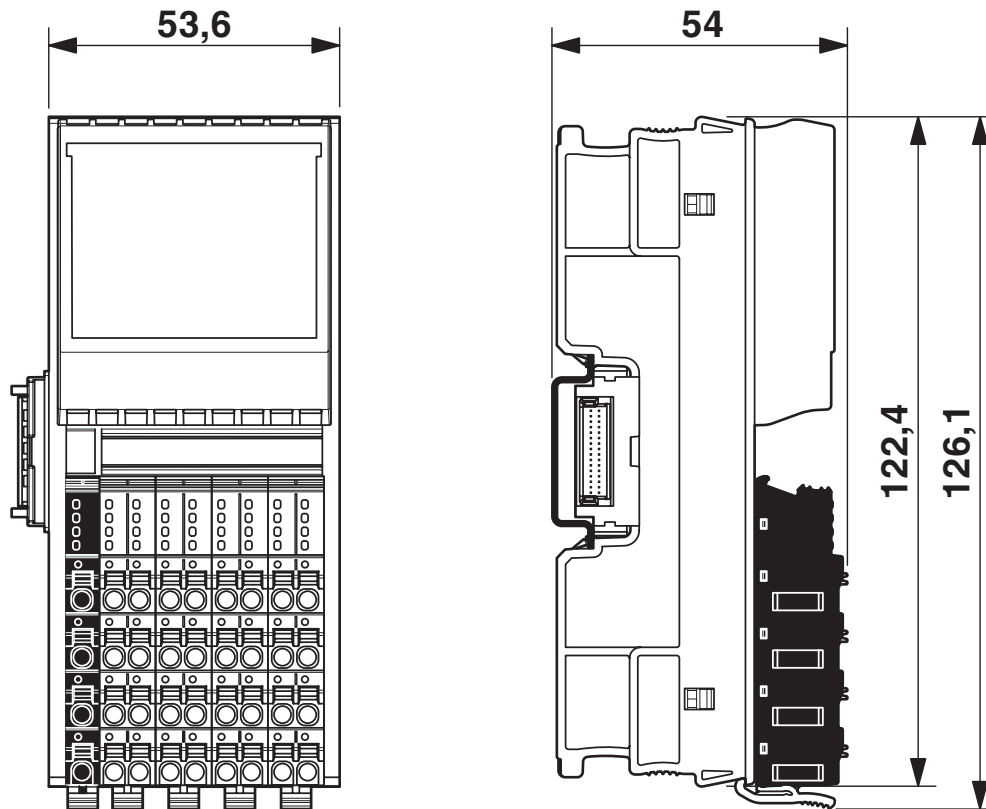
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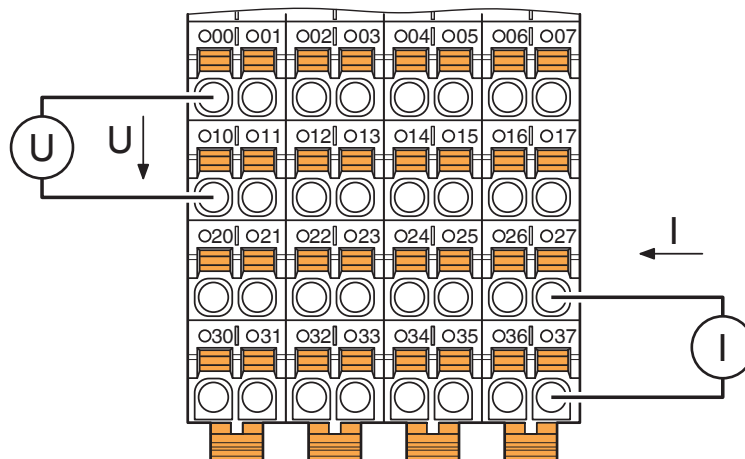
<https://www.phoenixcontact.com/us/products/2701232>

Drawings

Dimensional drawing



Connection diagram



Connection for voltage and current measurement

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Connection diagram



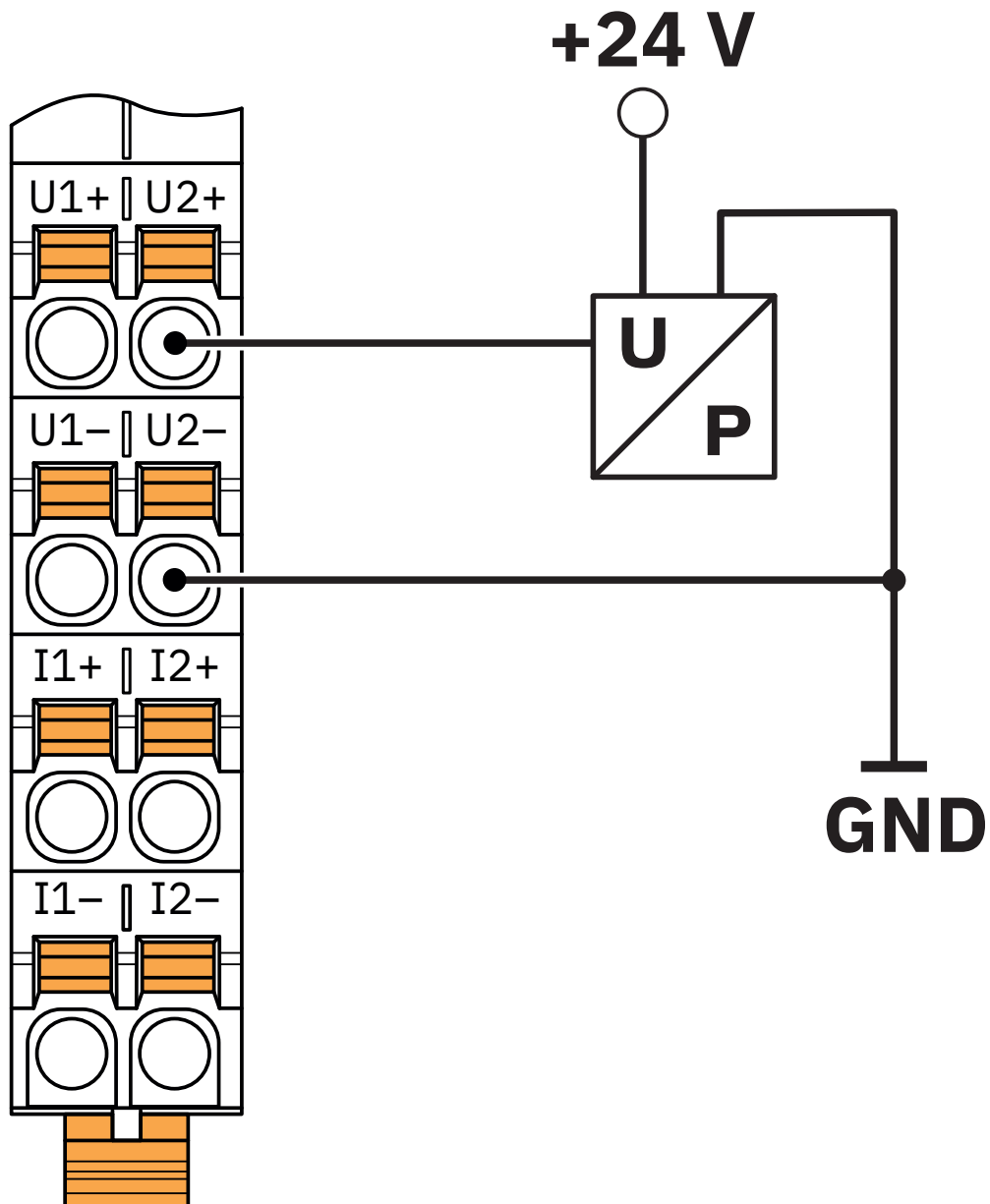
Active pressure sensor at a differential current input

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Connection diagram



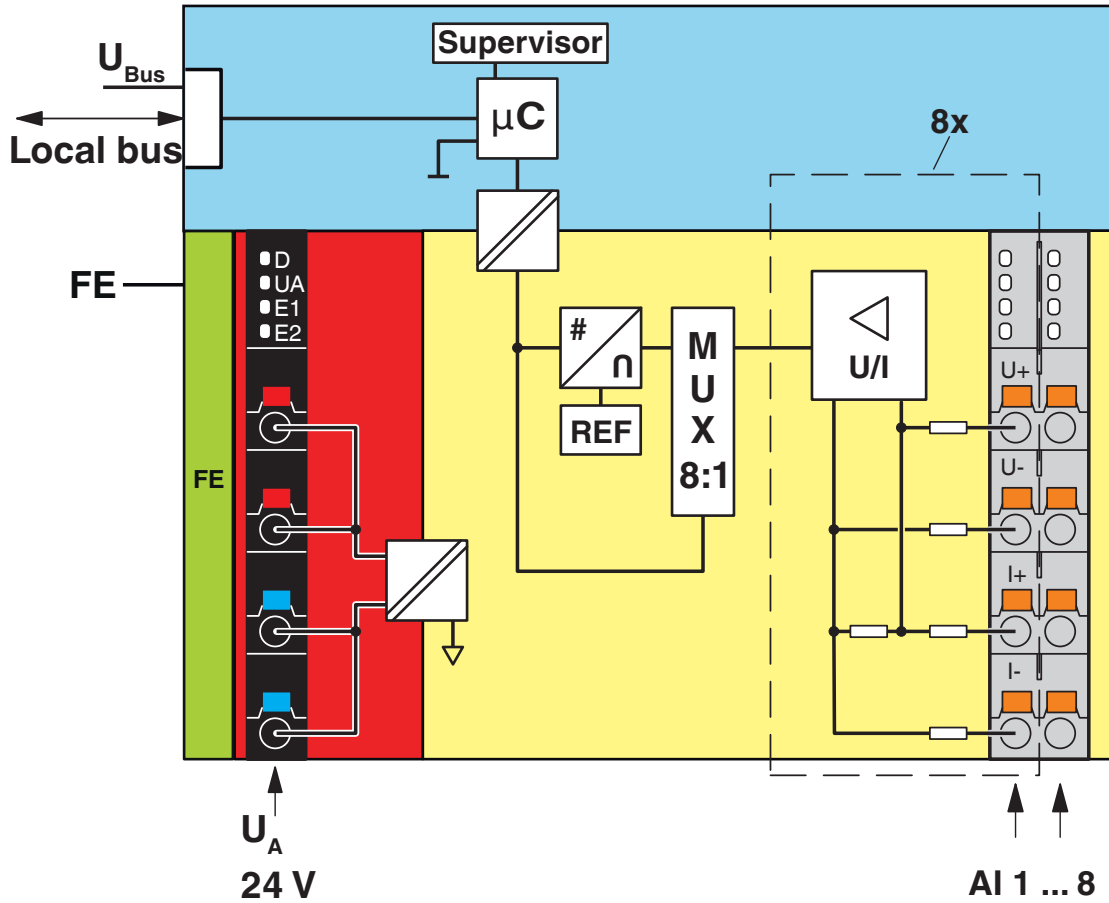
Differential voltage input with active 3-conductor transmitter

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Block diagram



Internal wiring of the terminal points

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Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2701232>



DNV GL

Approval ID: TAA00000DF



LR

Approval ID: LR2480202TA-02



PRS

Approval ID: TE/1020/880590/21

BSH

Approval ID: 840



cULus Listed

Approval ID: E238705

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27242601 |
| ECLASS-15.0 | 27242601 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001596 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 32151600 |
|-------------|----------|

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Environmental product compliance

EU RoHS

| | |
|---|--------------|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|---|
| REACH candidate substance (CAS No.) | Lead(CAS: 7439-92-1) |
| | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1) |
| SCIP | 269c814f-2fcf-4ef2-8c1d-3ea60215aaa8 |

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